CONSTRUCTION SPECIFICATION

Erosion Control Dam

(Owner/Operator) _____ (Project Title) _____

1. SCOPE

The work shall consist of furnishing all equipment and materials and performing all operations in connection with the construction of the erosion control dam as shown on the drawings and as staked in the field.

2. MATERIALS

All materials shall conform to the requirements shown on the drawings and all other referenced specifications as appropriate.

3. SITE PREPARATION

All trees, brush, stumps, roots, rocks and other objectionable materials shall be removed from the entire area of the base of the dam and disposed of beyond the downstream limits of the dam so as not to interfere with construction. Where specified in the plans, trees and brush must be cut from the entire reservoir area.

The foundation shall be prepared by sloping all channel banks and sharp breaks to no steeper than 1:1. All topsoil containing excessive organic matter shall be removed. The surface of the foundation area will be thoroughly scarified at a minimum of 4 inches deep before placement of the embankment material.

The moisture content of the foundation is to be made similar to the moisture content of the earth fill prior to placing the first layers of fill.

4. Cut-Off Trench

Where required, the cut-off trench excavation shall be to the line and grades shown on the plans, or as directed by the SCS inspector. Excavated material suitable for fill may be used in the dam. All other material will be spoiled in the location shown on the drawings or as approved by the SCS inspector and the project owner/operator.

5. Earth fill

Material. Embankment and cutoff trench backfill material shall conform to the requirements shown on the plans. Fill material shall be obtained from the reservoir area or other approved borrow areas. No borrow excavation shall be made below upstream channel grade unless shown on the plans. The material placed in the fill shall be free from all sod, roots, frozen soil, stones over six inches in diameter and other objectionable material.

Moisture Control. The moisture content of the fill material shall be adequate for obtaining the required compaction. Material that is too wet shall be dried to meet this requirement, and material that is too dry shall be wetted and mixed until the requirement is met. Unless otherwise specified the material shall contain sufficient moisture such that a sample taken in the hand and squeezed will remain intact when released.

Placement and Compaction. The placement and spreading of fill materials shall be started at the lowest point of the foundation, and the fill shall be brought up in approximately horizontal lifts. The top shall be maintained essentially as a level surface throughout construction. Where it is necessary to use materials of varying texture and gradation, the more impervious material shall be placed in the upstream and center portions of the fill.

The thickness of each lift prior to compaction shall not exceed 8.0 inches for compaction method (1), and 4.0 inches for method (2) described below.

Compaction of backfill shall be accomplished by one of the following methods unless otherwise designated on the plans or by the SCS technician.

(1) Two complete passes are made over the entire surface area of each lift by a sheepsfoot roller, heavily loaded rubber-tired equipment such as scrapers and trucks, or pneumatic rollers.

(2) Four complete passes of the tracks over the entire surface area of each lift by track type (crawler) equipment.

Each lift shall be compacted before placement of material for the next lift. Smooth surfaces resulting from the method of compaction shall be scarified a minimum of 2 inches deep prior to the placement of the next lift.

Chairs, hangers, and spacers of approved material shall be used to support the reinforcement and shall be placed in such a manner that they will not be exposed in the finished concrete surface. Rocks, clay bricks or wood blocks shall not be used. Reinforcing bars should be cut to length with a tolerance of one inch and cold bent with a tolerance of 1/2 inch. Reinforcing steel shall be continuous between floors and walls and around corners. Minimum slice lengths are 16 in., 19 in., and 23 in. for number 4, 5, and 6 bars respectively. Unless shown otherwise single mat reinforcement shall be placed in the center of the concrete section. Multiple mats shall be placed to provide 2 inch clearance from exposed surfaces and 3 inch clearance from all others with no less than 2 inches between mats.

8. CONVEYING

Concrete should be conveyed from the mixer or delivery truck as rapidly as possible. When chutes are used, the concrete should flow as nearly continuous as possible. There should be no unconfined vertical drop over 5 feet. The concrete should not be allowed to strike the form but drop straight down to avoid separation.

9. PLACING

Concrete shall be placed within 1-1/2 hours after the introduction of the water to the cement and aggregates. When the air temperature is above 90 degrees F, the placement time shall be reduced to 45 minutes. Concrete shall be deposited as close as possible to its final position in the forms. Placement methods shall not permit the concrete materials to segregate. Concrete shall be consolidated with a mechanical vibrator unless hand spading and tamping are approved by the SCS. All concrete placing methods shall be subject to approval by the SCS.

All concrete shall be placed upon clean, damp surfaces free from frost, ice, standing or running water. Concrete shall not be placed upon soft mud, dried porous earth, or upon un-compacted fill.

10. CONSTRUCTION JOINTS

When the placing of concrete is to be interrupted long enough for the concrete to take its final set, the joint shall be formed as shown on the plans. Immediately before placing concrete against any construction joint the surface shall be thoroughly cleaned in such a manner as to remove all foreign particles and loose or defective concrete. The joint shall be moist with all excess water removed from depressions before new concrete is placed.

11. REMOVAL OF FORMS

Forms should not be removed for 24 hours after placement, or 48 hours when the average air temperature is less than 50 degrees F.

12. FINISHING AND REPAIR

All exposed edges shall be formed with a 1 inch chamfer or finished with suitable molding tools. Immediately after removing forms, cone holes, honeycomb and other defects shall be repaired with a cement mortar consisting of one part cement to two parts sand by volume. Rough places on the concrete caused by excessive mortar leakage or patching should be removed and rubbed level with the surrounding surface.

13. CURING

All concrete should be cured for at least 7 days. The curing process should be done so as to keep the concrete moist. Curing compound may be used in lieu of other curing methods. It shall be sprayed on the surface at a rate no less than 1 gallon per 200 square feet. Concrete shall not be exposed to freezing temperatures during the curing period.

14. BACKFILLING

Backfill should not be placed against unsupported vertical surfaces until 7 days after placing the concrete. Backfill may be placed on horizontal areas, or against walls where the fill is brought up in even layers on each side, after 3 days.

15. CONCRETING IN HOT AND COLD WEATHER

In hot weather the contractor will provide means to maintain the temperature of the concrete below 90^{o}F during mixing, conveying, and placement.

Concrete may not be placed when the daily minimum temperature is expected to go below 40^{o}F unless facilities are provided for heating the concrete. The concrete must be maintained at a temperature between 50^{o}F and 90^{o}F from the time of mixing through 7 days after placement. Use of set accelerators or anti-freeze compounds will not be allowed.